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Project Title: Tissue culture and metabolite profiling of submergence tolerant rice M202 (Sub 1)

Synopsis: Metabolic differences in root and shoot cultures of rice plants: M202 (sub 1) and control M202 were analyzed to determine the effects of flood tolerance.

Abstract: Feeding over 2 billion people each year and making up 20% of the world's dietary energy supply, rice is a major food crop. Environmental stresses, such as flooding, limit agricultural productivity. During flooding, water fills air pockets, creating hypoxic and possibly even anoxic conditions. Submergence tolerant Oryza sativa rice plants M202 sub 1 and control M202 plants were used to determine the extent of the tolerance response and the metabolic differences between the two genotypes. Sterile tissue culture techniques were used to grow plants in vitro. Plants were submerged after the appearance of the primary leaf for 72 hours. Roots and shoots of the two genotypes were analyzed separately. GC/MS analysis was performed. Metabolic analysis was accomplished using isotope labeling, plastid isolation, and mitochondria isolation.